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Orchard report on Baton Rouge station.

William Rufus Dodson

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Orchard Report of Baton Rouge Station

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ORCHARD REPORT

OF

Baton Rouge Station

The experiment station test orchard was established at Baton Rouge in 1889-90, and partial reports have been issued from time to time.

Being located in close proximity to both the University and the city of Baton Rouge, there has been more or less difficulty in securing complete data, on account of depredations incident to the nearness of the city. This report will give the observations that have been gathered, and although incomplete, will be sufficiently full to be valuable to one who is interested in fruit, and who lives upon the Bluff soils of the State.

SOIL.

The Bluff soils of Louisiana are not friendly to all fruits. Being tenacious of moisture, as well as highly fertile, some varieties tend to produce excessive vegetation rather than heavy fruiting.

The fruits belonging to the more temperate regions do not possess full hardiness so far as Louisiana conditions are concerned, and becoming weakened by climatic influences, they soon become a prey to various insect and fungous attacks.

Another serious drawback is the uncertain character of the seasons. An open winter may induce very early blooming and subsequent frost will then kill the fruit. Measures adopted in Northern States for retarding the blooming period are not applicable here.

Another source of trouble is the tendency of some trees to overbear. This no doubt is the most prominent cause of the early death of some trees. The only remedy for this is to thin the fruit thoroughly and systematically, a thing that very few people, outside the commercial orchardists, ever practice.

To meet losses sustained, it is necessary to plant some fruit trees every year, so that as they bear and commence to fail, new trees will come into bearing and supply plenty of fruit.

Cultivation in the Station orchard has consisted in keeping the orchard as clean as possible and no fertilization has been given except an occasional crop of peas. Frequent use of the cultivator and plowing when necessary, has accomplished this fairly well. In the rainy portion of the summer it has been difficult to follow, and it is probable that some injury may have resulted by later cultivation, which seemed to be necessary.

Last year a bulletin upon the Japanese persimmons was issued, consequently they will not be treated in this report. Pecans and other nut trees, also, will be treated in a bulletin in the near future. Those interested in nut culture may find Bulletin No. 69, upon pecans, full of information. In all the illustrations in this report, the cards have inch marks, so that one may form a good judgement of the size of the fruit.

APPLES.

Quite a number of varieties of apples have been grown, both of Northern and Southern origin. The results of these tests indicate that apples may be grown in South Louisiana for home use, but they cannot be grown for commercial purposes. It is possible that an apple may originate in some portion of the State that will be hardy in this climate. A very long step in this direction has been accomplished by Mr. John Delee, of Teddy, La., who has been working along this line for many years. His collections of apples of Louisiana and South Mississippi origin contains a number of very desirable sorts. His home, however, is in the sandy uplands, very distinct from the bluff and alluvial lands. Another apple of great merit is the McMullen (see Fig. 2). This apple belongs to the Black Twig family, and while it is supposed by many to be a seedling, it is extremely probable that it is not. This apple is no doubt the best one so far grown in Louisiana and it, too, has been

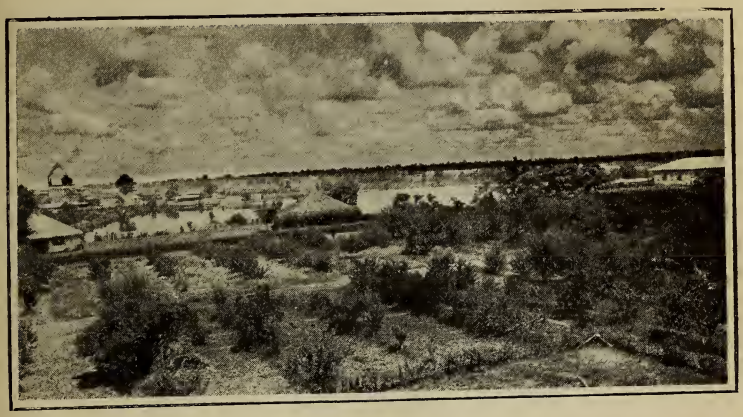


Fig. 1.

Fig. 2—McMullen Apple.

brought out on the sandy lands, coming from Stonewall, the southern part of Caddo Parish. The original trees were obtained from a traveling tree agent twenty years ago, who supposedly came from South Mississippi. So far as can be seen, the trees are not budded, nor are they grafted, yet as they are all alike, they were no doubt grown from cuttings—a very common practice years ago in the South. Whatever may be ultimately found out concerning the exact origin of this apple, its growth and productiveness in the uplands make it a very valuable home, and possibly a commercial apple for those sections. All these apples mentioned are growing at the Station, but have not fruited. The following varieties have been grown at the Station, all but a few of which have been brought to maturity:

Variety.	Blooming Period.	Ripening Season.	Remarks.
Alexander	March 20-April 10		Failed to bear.
Ben Davis			Has not borne yet.
Bellflower	March 28-April 15	June 15	Very few fruit. Inferior.
Bismark			Not fruited yet.
Bledsoe	March 30-April 20	July 25	Very fine fruit. Prolific.
Black Warrior	March 20-April 10	July 20	Decayed quickly. Few fruit.
Carolina Watson	March 20-April 10	June 20	Good bearer. Desirable.
Carter's Blue	March 25-April 10	July 20	Bears fairly well.
Cullassago	March 26-April 15	June 20	Shy bearer. Fruit fair
Disharoon	March 20-April 10	July 15	Very few specimens.
Duchess	March 20-30	June 30	Undesirable in bearing and fruit.
Doyle	March 10-30	July 15	Bore few. Quality good.
Early Harvest	March 15-30	June 10	Good bearer. Desirable.
Early Red Margaret	March 15-30	June 20	Poor bearer. Not desirable.
Early Penock			Not fruited yet.
Elgin Pippin	April 5-25	July 20	Poor bearer. Specimens bad.
Family	April 1-15	July 15	Fair bearer. Fruit fair.
Fanny	April 1-15	July 1	Poor bearer. Fruit fair.
Hewes Crab	March 20-April 10	June 20	Very few specimens. Not desirable.
Horse	April 5-29	July 15	Fair bearer. Fruit good.
Hislop	March 17-30	July 10	Poor bearer. Fruit fair.
Julian	April 15-30	June 20	Poor bearer. Fruit fairly good.
Kentucky Streak	March 1-20	July 10	Bears fairly well. Desirable.

Variety.	Blooming Period.	Ripening Season.	Remarks.
Mangum	April 10-25	June 30	Shy bearer. Fruit fair.
McMullen			Not fruited yet.
Maverac Sweet	April 15-29	June 20	Good bearer. Desirable.
May Pippin			Not fruited yet.
Moon			Not fruited yet.
Nantahalee	April 10-30	June 30	Fair bearer. Fruit good.
Pine Stump	March 15-20	July 30	Very few inferior specimens.
Rhodes Orange			Not fruited yet.
Red Astrachan	April 15-30	June 1	Prolific and desirable.
Red June	April 15-30	June 10	Prolific and desirable.
Red Winter			Not fruited yet.
Romanite	April 1-25	July 25	Good bearer. Fruit good.
Rome Beauty	April 20-30	July 20	Fair in yield and fruit.
Rough and Ready			Not fruited yet.
Royal Limbertwig			Not fruited yet.
Rutledge	April 15-30	July 15	Fair in yield and fruit.
Russet	March 20-April 10	July 30	Very few. Not desirable.
Shockley	March 27-April 15	July 15	Fair in yield and fruit.
San Jacinto			Not fruited yet.
Smith	April 15-30	June 15	Very good in yield and fruit.
Sweet Bough	April 15-25		Not fruited yet.
Summer Queen	April 15-30	July 1	Fair in yield and fruit.
Tannton	March 20-30	July 28	Very few but good.

Variety.	Blooming Period.	Ripening Season.	Remarks.
Texas Red	April 15-30		Not fruited yet.
Transcendent	March 10-April 5	June 25	Prolific and desirab
Tuskegee	March 9-23		Not fruited yet.
Tuscaloosa	March 18-30	July 20	Fair in yield and fruit.
Washington Strawberry	April 15-30		Not fruited yet.
Winesap			Not fruited yet.
Yates	March 26-April 15		Not fruited yet.
Yellow Forest	April 1-15	July 10	Fery few. Quality good.
Yellow Transparent	March 20-April 10	June 15	Fery few. Quality good.
Yellow June	March 25-April 10	June 1	Fair in yield and fruit.

Fig. 3—Bledsoe Apple.

Of the varieties named, there are only a few that are reliable and desirable. The apples recommended at this time are, in the order of their excellence, as follows:

Carolina Watson, a prolific bearer, with large, somewhat flattened striped fruit, coming into season the middle of June.

Red June, a very good bearer, fruit not large, deep red, excellent flavor, season early in June.

Red Astrachan, very good bearer, fruit nearly red, quite acid, medium size, coming into bearing about June 1st.

Early Harvest, a small yellow apple, fairly good bearer, maturing early in June.

Smith, a medium sized, light yellow apple, good bearer, maturing usually early in July.

Bledsoe, very large, fine, quite prolific, season July 25. (See Fig. 3.)

TRANSCENDENT CRAB.

This is a healthy growing, good bearing crab apple, maturing its fruit about July 10th. An excellent fruit for jelly purposes.

While these apples are all early maturing they are all apples of excellence. An apple that matures late in Louisiana has to run the gauntlet of disease, birds and boys, to the end that few late apples ever succeed.

APRICOTS.

The following varieties of apricots have been grown, but they have never produced fruit, nor did any of them live over five years: Early Golden, Moorpark, Royal, Roman, Alexis, Alexander, Peach.

CHERRIES.

A number of cherries have been grown, but none have lived long enough to produce fruit, except the Louisiana Ironclad. This cherry originated in North Louisiana, and was introduced by Mr. A. K. Clingman some years ago. Although it is the only cherry capable of producing fruit to any extent in Louisiana, it is far from being desirable.

FIGS.

Figs constitute the main fruit crop of Louisiana. They are perfectly at home in nearly every section and grow and produce abundant crops without any care or attention. In the event of the extension of the canning industry, fig growing may be-

come of great commercial importance. Being soft, not being able to stand transportation, and not being suitable for commercial drying in this climate, commercial fig growing will depend upon the cannery for development, and it will be the local cannery preserving establishments that will have to handle the crop. The growing of figs for preserving purposes has been on the increase during the last decade. Where canneries are located the fig industry should be permanent and prosperous. Near New Orleans figs are in demand for this purpose, as a large cannery located there takes all the figs that are obtainable. The product finds a ready sale. The demand exceeds the supply, and the grower receives good prices. Preserved figs are almost unknown in the Northern market. The only figs found there are the dried ones. It only requires the introduction of the preserved product to develop a good market for it. More trucking and more canneries to take care of the surplus stock will give an opportunity for disposing of hundreds of bushels of figs that annually are lost in Louisiana. The fig has not been well understood botanically, and there has also been great confusion in the nomenclature. Prof. Gustav Eisen, of California, made a full study of the figs and his investigations have been published. Prof. H. N. Starnes, of the Georgia Experiment Station, also has given the subject exhaustive study, and the following classification o four Southern figs has been taken from his bulletin (Bulletin 61, Georgia Experiment Station) upon fig culture:

The condensed statement below gives the classification and at the same time will explain to many the reason why certain varieties drop their fruit.

There are four forms of flowers:

1. Staminate, or male flowers.

2. Pistillate, or female flowers.

3. Gall flowers, serving as a home for the small fig wasp, the Blastophaga.

4. Mule, or sterile flowers, found almost to the exclusion of the other kinds in our Southern figs.

These peculiarities of the fig naturally divide them into different classes.

Three classes and seven sub-classes have been formulated. As all of our Louisiana figs come under one of these heads, nothing will be said at this time concerning the other classes, except what is necessary for an understanding of the classification as they depend upon the Blastophaga or "fig-wasp" for pollination. As we do not have this insect, there is no necessity for describing them in full. The class of figs then that interests Louisianians is the one designated as Domesticated Figs. It includes all the figs grown in the South. Southern figs produce *pistillate* or *female flowers,* and, *mule* or *sterile* flowers. While they do not produce *staminate* or *male flowers,* nevertheless, they possess the ability to develop an edible product, with no true seed. It is impossible for any of our figs to produce true viable seed, hence unless figs of another class capable of producing seed are grown in Louisiana, one may never expect a variety of figs of Louisiana origin. The different blooming habits of our figs easily separate them into three distinct divisions.

Class 1—*Mission Figs,* capable of producing both an early and a late crop.

Class 2—*Adriatic Figs,* capable of producing a late crop, but dropping all of its first crop.

Class 3—*San Pedro Figs,* capable of producing an early crop, but dropping all of its late crop.

The *sterile* or *mule flowers,* are the ones that develop into our edible fig. The *pistillate* or *female flowers,* invariably drop off.

In the Mission class of figs the *sterile* or *mule* blooms predominate in both its *early* and *late* crops, hence, climatic conditions being favorable, two crops of figs may be obtained.

In the *Adriatic Figs* the *pistillate* or *female* blooms predominate in the *early* crop, and the *sterile* or *mule* blooms predominate in the *late* crop, hence the *early* crop drops, and the *late* crop matures.

In the San Pedro Figs, the *sterile* or *mule* blooms predominate in the *early* crop, and the *pistillate* or *felame* blooms predominate in the *late* crop, hence the *early* crop matures and the *late* crop drops.

Occasionally *sterile* or *mule* blooms on both the early crop of the Adriatic type of figs and the late crop of the San Pedro type of figs may develop into edible fruit.

It will be seen by this that the weather conditions have a great deal to do with the crop of figs. It also explains the dropping of figs to a very large extent.

Figs are universally propagated by means of cuttings, which seldom fail to grow. In rare instances, they have been ring budded, but the great readiness with which fig cuttings grow makes it unnecessary for any other method to be used.

A large number of varieties, obtained from various sources, have been grown. A number of them from California. have been growing several years, and while often times loaded with fruit, seldom produce an edible fig.

Some varieties are known under many different names, and varieties obtained from different sources, prove to be well-known varieties under new names. This confusion in time will be eliminated. The following varieties have been grown at the Station. The names are those which came with them from different sources. Some of these names no doubt are incorrectly spelled, but are given as they were received. It must be remembered also that soils and location have everything to do with the behavior of figs, and a fig that does well or poorly at Baton Rouge may do differently under different soils and conditions in other parts of the State.

VARIETIES.

Agen—This is a medium sized, white, deep red fleshed fig. Season, August. Not particularly desirable.

Angelique (Fig. 4)—A round, white, white fleshed fig. Medium size, good flavor. Not a strong grower. Season, middle of July.

Black Dattato—Has never fruited. Evidently belongs to the San Pedro type.

Black Marsailles—A small, black, light rose fleshed fig. Very prolific. Too small for use. Season early in July.

Black California—Same as Mission.

Black Bourgassotte—A large, oblong, brown, red fleshed fig; never has borne to amount to anything. Very late.

Black Brogiotto—Never fruited; probably belongs to the San Pedro type.

Brianzola—Another variety which fails to bear. Evidently belongs to the San Pedro type.

Fig. 4—Angelique Fig.

Fig. 5—Brunswick Fig.

Brown Ischia—Same as Brunswick, Brown Turkey, Mandana, and Smyrna, in the collections at the Station.

Brown Turkey—This variety is not true to name, from descriptions given for it. (See Brunswick.)

Brunswick (See Fig 5)—Same as Brown Ischia, Brown Turkey, Smyrna, and Mandana, as sent to the Station from various sources. A very large, dark brown fig with light red flesh. Shape rather oblong and apt to be one-sided. Very prolific, and quite desirable, season the middle of July.

Capri—The wild fig, obtained from California, to plant with the true Smyrna. Useless except for experimental purposes.

Celeste or Celestial (Fig. 6)—The little "Blue Fig" that is grown universally in Louisiana. By far the hardiest, and all around best fig grown. Fruit is small, color a lavendar blush, very sweet, and pronounced in flavor. May be eaten without peeling when fully ripened.

De Constantine—A large, violet brown, somewhat flattened fig with deep red flesh. Quite prolific. Season, the middle of August. Not a desirable fig, as it lacks flavor. A canning variety.

Drop d'Or (Fig. 7)—A small, round, yellow fig, with rose-colored flesh. Very sweet, and melts in the mouth. Splits open badly when weather is damp. A very delicious fig, but a weak grower.

Dalmantino—This variety has not borne fruit, evidently not a Southern fig. Probably belongs to the San Pedro type.

Early Violet—A white-fleshed, brownish fig. Has not done well. Has borne but little fruit. Not at all desirable, if the trees in the orchard are true to name. Season the latter part of July.

Guigliono—A large fig with deep red flesh. Very late and not at all reliable or desirable.

Honche de Bray—A round, yellow, cream-fleshed fig with slight cavity when ripe. Very delicious. Season the last of July. Very prolific. Has a tendency to sour quickly.

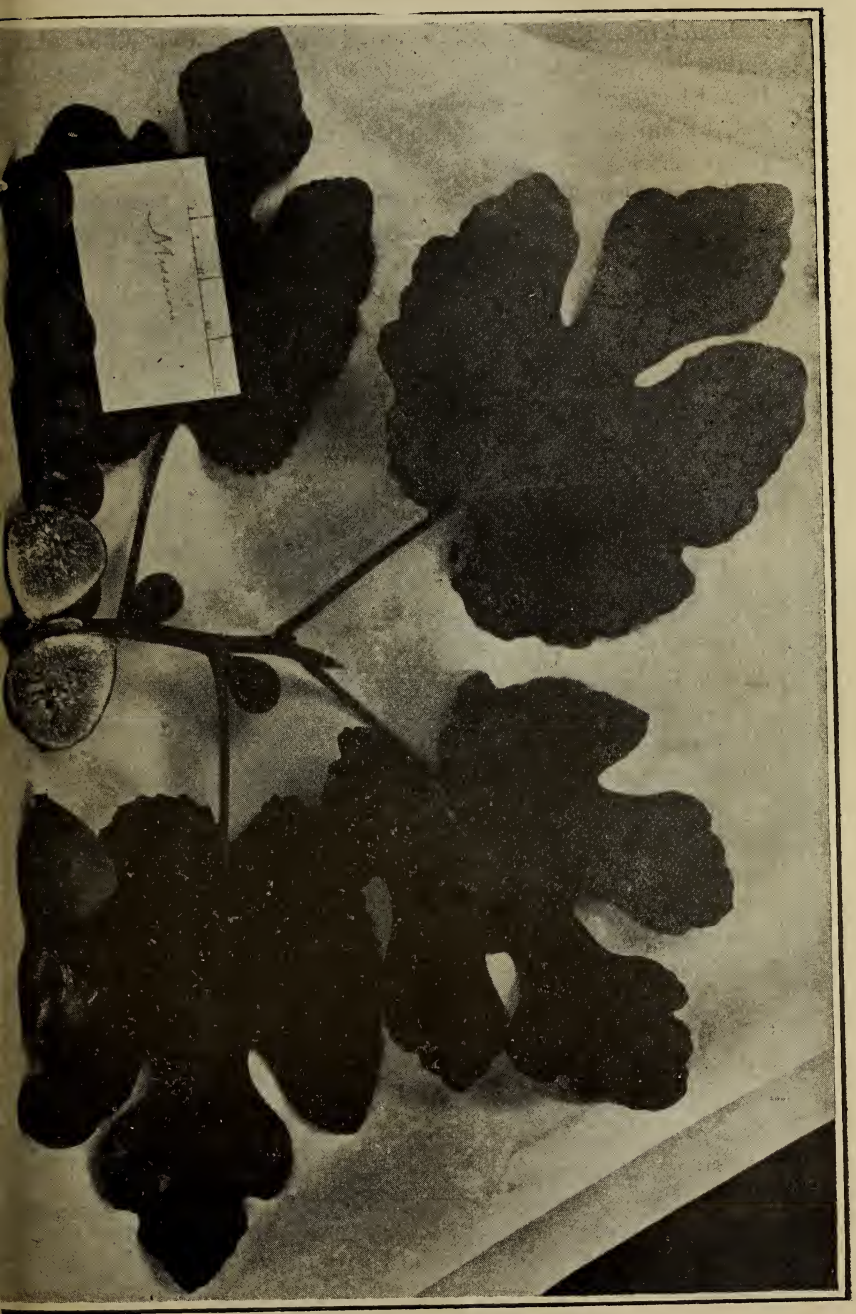
Lemon—The variety grown under this name proved to be identical with the Celeste, hence is not true. The Lemon Fig as grown in certain parts of Louisiana is a very desirable fig.

Mandana—See Brunswick.

Fig. 6—Celeste Fig.

Fig. 7—Drop d'Or Fig.

Fig. 8—Madeline Fig.



Madeleine (Fig. 8)—Same as White Neyri and White Marsailles, as we have them. A large white, somewhat flattened fig. Flesh cream white. Skin rather thin. Very prolific. The best of our white figs. Season early in July and ripening for three weeks.

Mission (Fig 9)—Same as Black California. A medium sized, oblong, black fig, with rose-colored flesh. Season middle of July. Quite prolific, very sweet and the best of the black figs.

Monica Bianca—A large, white, somewhat flattened fig, with deep red flesh. Very prolific and quite desirable, except that in moist weather it splits badly. Season the middle of July. Seems to do better in South Louisiana than at Baton Rouge.

New French—A medium-sized, nearly round fig, with cream-colored flesh. Very sweet and very delicious. Season middle of July. Splits very badly in wet weather, but a very desirable fig. Quite prolific.

Osborne's Prolific (Fig. 10)—Same as White Persian. This is an oblong, short-stemmed fig. Brown at the tip, shaded to amber at the base. Quite large, flesh transparent and cream-colored. Very prolific, splits badly. Season the middle of July and continues for two weeks.

Projans—A very late, white fig, not suited to our conditions. Seldom bears and is worthless.

Reine Blanche (Fig. 11)—This is a medium-sized, rather round fig, with pink flesh. A solid, desirable, prolific fig. Season early in July. One of the best figs in the orchard.

Rubado—A medium-sized, red-fleshed fig. Very late and extremelely uncertain. Worthless.

Sanvito—Has not borne fruit. Evidently belongs to the San Pedro type.

San Pedro—Whether this variety is the true San Pedro is doubtful, yet it bears very early in June when it bears at all and may be true. A few medium-sized white-fleshed. white figs have been produced. Worthless.

Smyrna—The variety secured under this name is identical with the Brunswick as we have it. Not the genuine Smyrna.

True Smyrna—This variety was obtained with the true Capri for experimental purposes. Has not produced yet. Six years old.

Fig. 10—Osborne's Prolific Fig.

Fig. 11—Reine Blanche Fig.

White Brogiotto—A very late white fig. Almost barren and worthless.

White Bourgassotte—A very large white fig. Very delicious. Belongs to the San Pedro class, as the only time it has ever borne fruit was in 1906, when a few of its first crop matured. Worthless here.

White Dattato—Has failed to fruit. Probably belongs to the San Pedro class.

White Neyri—Same as Madeleine and White Marsailles as we have them. See Madeleine.

White Ischia—A small, round, white fig with cream-colored flesh. Season the last of July. A very sweet fig, and prolific, but not as desirable as a number of others.

White Genoa—A medium-sized yellow fig with amber-colored flesh. Round in shape, fairly good bearer. Season the latter part of July. It is rather doubtful if this is the genuine White Genoa.

White Marsailles—This variety is undoubtedly not true to name, as it is identical with Madeleine as we have them.

White Persian—Same as Osborne's Prolific (which see).

Wonderful (Fig 12)—This is the largest fig in the orchard. Fruit very large, somewhat flattened, contains a cavity generally. Flesh is rose-colored. Not a heavy bearer, but a very vigorous growing tree. Season the middle of July. Not very desirable.

Zimetza—A deep red-fleshed variety. Not certain nor desirable. Seldom bears.

Of all the varieties grown in Louisiana the Celeste is the hardiest, most prolific and most popular. Its one fault is its small size. When dead ripe it may be eaten without peeling. This has been doubted, but when completely ripened, the juice and skin loses its vesicant or irritating qualities, and unless the individual is peculiarly susceptible no ill effect will follow. Some of the Gulf States report that the Brown Turkey is hardier than the Celeste, but this is not the case here. The Celeste, of all the varieties in all portions of the State, has shown the greatest amount of resistance to the cold weather. There are a number of varieties that should be grown for preserving purposes. Among these should be mentioned the Monica Bianca, Madeleine, and Brunswick, while the Mission is very sweet and

Fig. 12—Wonderful Fig.

answers both the purposes of table and preserving fig. The largest fig in the orchard is the Wonderful, a shy bearer, with fruit three inches in diameter.

GRAPES.

A large number of varities of grapes have been grown, but all have succumbed except a few varieties of the Southern Summer Grape, and Scuppernongs.

The excellent table grapes of the North live but a few years on this soil, generally not longer than to bear two or three crops. Of these the Champion, Diamond, Dracutt Amber, Concord, Niagara, and Moore's Early have proven the best. Of the wine type the Jacquez, Black July, Herbemont, and Ives have grown well and borne heavily.

A small vineyard composed of the improved varieties of Scuppernongs has been established, and as this is the most prominent native grape of Louisiana, growing everywhere luxuriantly, it is full of promise. A few of the varieties have produced fruit. The following varieties are growing in the vineyard and are doing well:

Eden	James	La Salle
San Jacinto	Sanalba	Sanrubra
Sanmelaska	San Monta	Thomas

GOUMI (Eleagnus Longipes).

This peculiar plant is attractive and useful as well. Its large bush-like growth covered with healthy and beautiful foliage, makes it a valuable plant for the lawn as an ornament.

Its very heavy crop of cherry-like fruit makes it desirable for use. It grows readily from cuttings and has no serious enemies or diseases.

JUJUBE (Zizyphus Jujuba).

The Jujube, while grown only as a novelty or curiosity, is relished by a large number of people for the peculiar flavor of its small stone fruit. It grows well throughout this section and usually bears annually a heavy crop.

LOQUAT OR MEDLAR.

The Loquat, universally miscalled the Japanese plum, is grown to some extent and several varieties have been grown in the

orchard. It is a very uncertain bearer, as it blooms at Baton Rouge in December and January, and is very often killed by a freeze; yet when it does produce a crop it is highly prized. The small, fig-shaped, juicy, sub-acid, yellow fruit has a delicious flavor. Unfortunately there is a very serious blight which attacks the tree that is very difficult to control. Only a very few varieties have been propagated.

MULBERRIES.

This fruit has received very little attention, but it should be grown more frequently. It is a very rapid grower, a very prolific bearer, and the fruit may be used for various purposes. It should be planted, too, in various places as a food for a large number of birds, that would seek food probably in other portions of the garden. There are a number of varieties to be obtained, but as they become large trees, and the Station ground is limited, only one variety, the Stubbs, has been grown. It is very prolific, good flavored and quite large.

OLIVES.

Olives have been tried repeatedly, but at this Station it is labor thrown away. There are at present three small trees growing in the orchard, but there has been but a few specimens of fruit. In New Orleans they have produced fruit, but there is little or no promise in their growth. It is very improbable that anything can be done with them.

ORANGES.

The commercial orange section of Louisiana is found on the banks of the Mississippi, below New Orleans. In this section are to be found many large orchards in regular bearing. Along the gulf region westward also may be found sections where the hardiest varieties are grown. In all cases the hardy Citrus Trifoliata is used as a stock, and the Satsuma, very largely as a variety. In the largest orchards in the orange section a number af varieties are grown, some of Louisiana origin. These orchards are located close to the levee, and in a measure receive a certain amount of protection from the river. At times smudges are used for frost protection, but this is practiced by only a few. Banking of earth around the trunk of the tree is also practiced to prevent injury from freezes. It is reported that the annual crop approximates 150,000 boxes. Truck is also

grown with the oranges and the combination has proven to be very successful.

There have been many efforts to extend the culture of oranges and to obtain hybrids of the Citrus Trifoliata and some sweet orange. The United States Department of Agriculture has sent out several named hybrids of this kind, but so far they have not been sweet, but have been very acid. However, they may be used in the manufacture of ades, especially for summer drinking. These hybrids have been given the name of Citranges, and the following varieties from the United States Department of Agriculture are growing at the Station:

Colman	Morton	Rusk
Rustic	Savage	Willets

Mr. J. L. Normand, of Marksville, has brought out a hybrid of this same kind, which seems to be hardy at Marksville. It is a small sweet orange, and really has no trace of the bitterness of one of its parents. If this variety possesses the hardiness indicated at this time it will be the greatest acquisition yet accomplished with the orange for Louisiana.

The varieties of sweet oranges growing in the orchard are the Satsuma, Bahia and Du Roi. They bore a full crop last year and were not injured by the cold. A few mandarins, tangerines and kumquats were also grown, bearing well.

The use of Citrus Trifoliata as a stock and the Satsuma as a variety in the cooler sections bordering the orange belt will extend orange culture much farther than it is at the present time. With slight protection oranges may be grown quite easily, but failure to protect at the needed time will result in failure.

Besides those mentioned, seedlings from the orange of Northern China are growing at the Station and will be watched with interest.

PEACHES.

Peaches are not long lived in the bluff soils. Twelve to fifteen years is usually the limit, and oftentimes, in case of heavy bearing, much less. The following table gives the list of peaches that have been grown recently, with brief notes of their blooming period, season and general standing:

Variety.	Blooming Period.	Ripening Season.	Remarks.
Alexander	March 19-25	May 1	Yield fair. Fruit inferior.
Alice Haupte	March 16-27	June 15	Yield good. Fruit desirable.
Amora	March 13-22	June 15	Yield good. Fruit desirable.
Admiral Dewey	March 10-20	May 16	Very few. Fruit excellent.
Beauty Blush	March 14-20	June 10	Yield good. Fruit excellent.
Belle of Geogia	March 10-20	June 1	Prolific. One of the best.
Berckmans	March 17-25	June 16	Very few. Not desirable.
Bishop	March 10-27	June 14	Prolific. Fruit fair.
Chilow	March 13-24	June 10	Prolific. Fruit fine.
Crimson Beauty	March 14-24	June 20	Fair yield. Fruit good.
Chinese Cling	March 14-29	July 20	Prolific. An old stand-by.
Champion	March 15-25	June 10	Prolific. Fruit excellent.
Climax	March 18-27	July 10	Yield light. Fruit fair.
Clingmans May	March 13-24	May 15	Yield very light. Not desirable.
Dwarf Japan Blood	March 12-20	May 20	Prolific. Excellent.
Early Tillotson	March 10-27	June 10	Yield fair. Fruit good.
Early Rivers	March 10-25	June 1	Prolific. Excellent.
Early Louisa	March 14-30		Failed to bear.
Early Crawford	March 10-22	June 16	Yield fair. Excellent.
Eatons Gold	March 17-25	July 10	Yield light. Excellent.
Eldred Cling	March 10-27	July 20	Yield good. Excellent.
Emma	March 14-24	June 30	Prolific. Fruit fair.
Excelsior	March 17-25	June 15	Yield light. Fruit good.
Elberta	March 20-30	July 20	Yield medium. Fruit good.

Variety.	Blooming Period.	Ripening Season.	Remarks.
Eureka	March 18-25	July 10	Yield light. Inferior.
Everbearing	March 20-	July 25	Few. Undesirable.
Fleitas	March 13-24	June 15	Yield fair. Fruit fine.
General Lee	March 15-20	June 20	Yield good. Fruit fine.
Greensboro	March 13-24	June 30	Yield fair. Fruit very good.
Hales Early	March 12-21	June 20	Prolific. Fruit good.
Heath	March 16-25	July 10	Yield very light. Fruit fair.
Hynes Surprise	March 20-30	May 30	Yield good. Fruit fair.
Japanese Wonder	March 15-21	June 25	Very fair. Fruit inferi
June Rose	March 13-20	June 20	Yield good. Fruit fine.
Lady Ingold	March 15-25	June 2	Yield light. Fruit good.
Miss Lolo	March 13-27	June 15	Prolific. Excellent.
Mamie Ross	March 17-29	May 15	Prolific. Excellent.
Ray	March 15-25	May 30	Yield light. Fair.
Reeves Favorite	March 15-25	June 3	Yield light. Inferior.
Sneed	March 13-24	May 25	Good yield. Excellent.
Strouts Early	March 10-23	May 10	Prolific. Excellent.
Superb	March 20-28	July 10	Yield fair. Excellent.
Susquehannah	March 18-25	June 23	Light yield. Fair.
Stump the World	April 1-10	June 20	Very few. Fair.
Triumph	March 16-27	May 20	Prolific. Excellent.
Victor	March 14-29	May 30	Prolific. Excellent.
Wonder	April 1-10	June 1	Light yield. Fair.
Yellow Mystery	March 19-25	May 16	Light yield. Good.

Notwithstanding the common opinion that it is not worth while to pay attention to peach trees on the richer lands of Louisiana, a little care in planting and attention given to a few details, good fruit may be obtained.

By selecting a well-drained site and subduing the luxuriant growth, two good crops and two partial crops may be obtained, hence, if a number of young trees are set every year, plenty of peaches may be had for home use. For home planting the following varieties are desirable, in their order of ripening:

Sneed	Strouts Early	Early Rivers
Belle of Georgia	Triumph	Fleitas
Elberta	General Lee	Chinese Cling

The commercial peach section of Louisiana is found in the sand-hill portion of the State, where numerous orchards are now being planted. The Elberta, and other similar large, red-cheeked, yellow-fleshed varieties are being selected for this purpose.

PEARS.

A large number of pears have been grown, but none have fruited except those belonging to the oriental type, and only one of these has withstood the attacks of the pear blight, probably the worst vegetable disease known.

The Smith pear (Fig. 13) has been bearing annually for a number of years and has not failed to produce a crop but once, the season of 1899, when a February freeze killed a great many trees in the South. The Keiffer and Le Conte have fruited, but the blight often kills the trees of each.

The Smith occasionally has a blighted twig, but it withstands the attacks so well that it seems to be practically blight-proof. The fruit of the Smith, like that of all the other sand pears, is hard and never softens. It is a preserving pear, and should be picked before it matures and made into preserves at once.

The Le Conte, when ripened in a cool, dark place becomes very juicy and luscious.

The Keiffer is the largest of the sand pears, and in common with the others, suffers heavily from the blight.

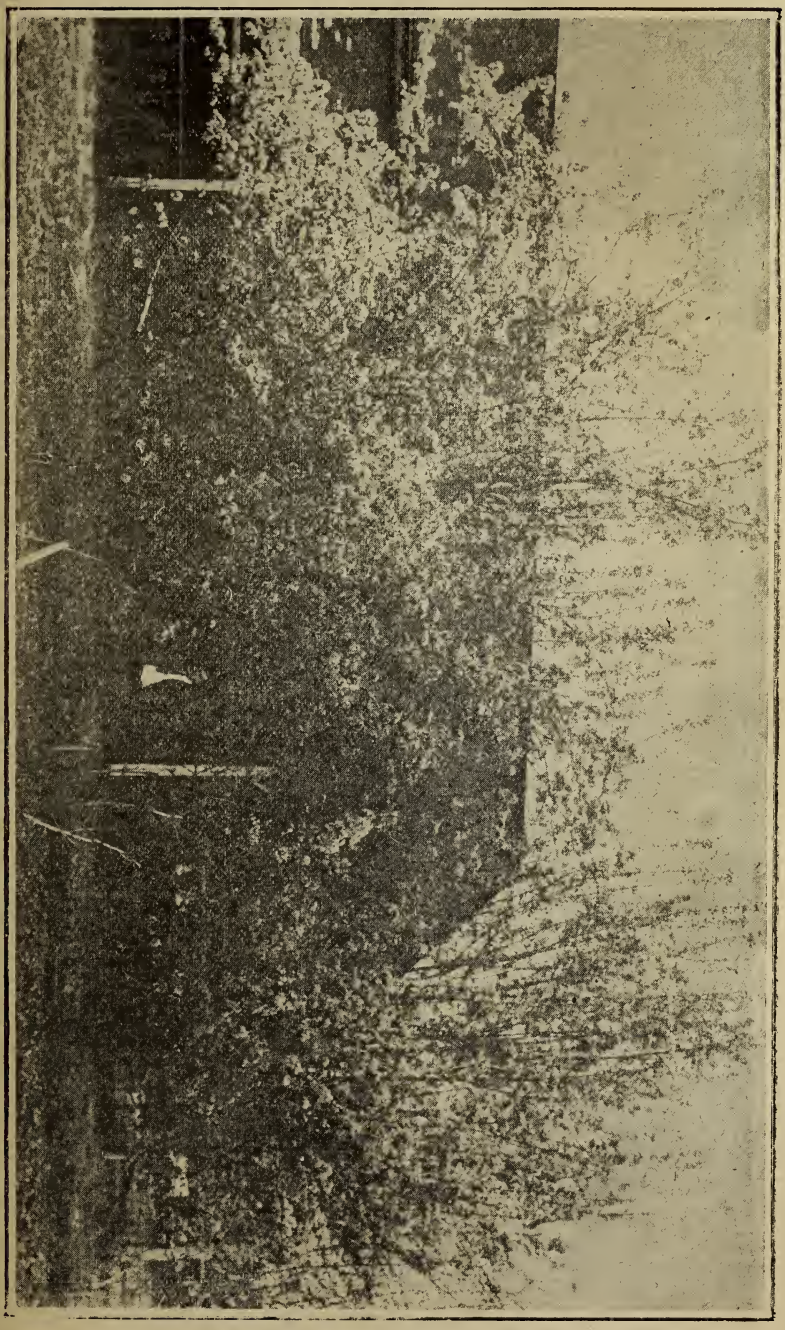


Fig. 13—Smith Pear Trees, in Bloom.

The Smith, from its behavior at the Station, can be recommended very highly and above all the others. The following varieties have been failures:

Alamo	Belle Cluster	Bijou
Daidai	Hawaii	Howell
La France	Lawson	Lexington
Seibold	Ott	Perpetual
Petite Marguerite	Seckel	Winter Nellis

Southern pears are used mainly for preserving purposes. The more delicious European pears, grown in the North for table purposes can not be grown here. The Le Conte, if picked before ripened and placed in a cool dark room will ripen into a fairly desirable pear for table use, but the other varieties of the sand pears are not improved by that practice. They should be picked while quite green in order to obtain the best preserved product. The harder spots found in the maturing pear are absent if this is done. For immediate use as a stewing pear they may be used at any time.

PLUMS.

A large number of varieties of the native, European and Japanese plums have been tried from time to time. None of the European varieties (prunus domestica) have lived to bear fruit. The native and the Japanese varieties have borne well, the latter having a great tendency to overbear.

The Southern native plums are small but very prolific, and are used in very large quantities for jelly and preserves, but the Japanese varieties that succeed best are large, prolific, of fairly good flavor and have a very small pit in proportion to the amount of flesh. Of the Japanese varieties the Abundance and the Burbank lead all the others, and of our native varieties the Pottawattami, Robinson, Munson and Missouri Apricot have borne very well indeed. The following list gives the varieties grown:

Variety.	Blooming Period.	Ripening Season.	Remarks.
America	March 20-30		Has not fruited.
Abundance	March 12-20	June 14	Very prolific. Excellent.
Burbank	March 12-22	June 14	Very prolific. Best.
Botan	March 12-20	June 14	Same as Abundance.
Caddo Chief	March 4-15	July 10	Prolific. Excellent.
Climax			Not fruited yet.
Combination	March 14-28		Has not borne fruit.
Clifford	March 18-24		Has not borne fruit.
Doris	March 14-21	July 1	Very few. Good.
Early Violet	March 18-24		Has not borne fruit.
Excelsior			Has not borne fruit.
Hale	March 12-21		Has not borne fruit.
Kelsey	March 7-19	July 15	Shy bearer. Not desirable.
Munson	March 7-20	May 8	Prolific. Excellent.
Pottowattamie	March 18-25	June 1	Prolific. Excellent.
Red Negate	March 15-22	June 20	Light bearer. Fair.
Robinson	March 12-20	June 25	Very prolific. Good.
Wayland	March 4-20	May 10	Light bearer. Good.
Willard	March 12-22		Has not borne fruit.
Whitaker			Has not borne fruit.
White Kelsey	March 10-21		Has not borne fruit.
Yeddo	March 14-25	June 25	Light yield. Fair.
Mikado	March 12-25	June 8	Light yield. Fair.

POMEGRANATES.

All the pomegranates do well. Several varieties have fruited, and all are hardy. The Sweet seems to be liked the best, although all the varieties are eaten readily. They are propagated easily from cuttings, and have no serious enemies nor diseases up to this time. The following varieties are growing in the orchard:

Papershell	Rhoda
Purple Seeded	Spanish Ruby (purple seeded)
Persian	Sweet

QUINCES.

A few varieties of quinces have been grown, but they have not made a satisfactory growth The trees suffer badly from fungous diseases, and the fruit, ripening so late, almost always decays before it reaches the ripening stage. The varieties grown have been the Angers, Fuller, Meech, and Orange; the last three being the most desirable. The Chinese quince may be grown, but the large coarse fruit is not as useful as the other quinces.

SMALL FRUITS.

All of the small fruits, so-called, have been tried repeatedly. Among the total failures are mentioned the gooseberries, currants and raspberries. These fruits will not thrive in this section. The blackberries, dewberries, and strawberries grow well and are very prolific; the blackberries and dewberries, however, grow so abundantly everywhere that very little or no attention is given to the cultivated varieties.

BLACKBERRIES.

Only a few blackberries have been grown, some of which have thrived and produced well. The following are the varieties:

EARLY HARVEST.

Very prolific, but small. Does not do well in this climate.

EARLY CLUSTER.

Not very prolific nor healthy.

ERIE.

Very desirable berry, but weak grower.

EVERBEARING.

This is a very vigorous grower, but is very small. It is worthless as a commercial variety.

DALLAS.

Very healthy, prolific and desirable berry; good size and fine.

KITTITINNY.

A very prolific berry but a weak grower, on the whole not long lived.

ROBINSON.

A vigorous grower and prolific bearer. An excellent berry.

HIMALAYA BLACKBERRY.

A new plant sent to the Station by the U. S. Dept. of Agriculture in 1906. It is a vigorous grower, but is worthless as a fruit.

DEWBERRIES.

Several varieties of dewberries have been grown, all of which have succeeded well except the Lucretia, which has been a failure. The following is a list of the varieties:

AUSTIN (MAYES).

This is the best producer grown at the Station. Its berries are not as large as the Manatee, but it is more prolific and the quality is the very best. It comes into bearing by May 15th and continues to bear until June 15th.

BADEN.

A white dewberry of no value.

COLEMAN.

Another white dewberry of no value except as a novelty.

LUCRETIA.

The leading commercial variety of the Middle States. It has been a failure at the Station.

MANATEE.

The largest one of the list. A fine berry, but not as juicy as the Austin.

STRAWBERRIES.

Strawberries may be grown in every section of Louisiana, but in order to carry them through the warmest summer weather some attention must be given to them. The heavier the soil the more difficulty will be experienced, as the growth of grass in the rainy season is luxuriant, and causes considerable trouble. It is almost impossible to keep them in proper shape under the conditions.

Judicious mulching and careful working so as to keep them reasonably clean without disturbing the roots will bring them through the unfavorable season. The region along the Illinois Central Railway is the leading commercial strawberry section and a very large acreage is devoted to them. The shipment of berries from the leading shipping point on their heaviest day reaches nearly thirty car loads. As a rule they pay well, but, like all agricultural and horticultural crops, a great many risks have to be run and some seasons are not very profitable. New beds planted every year give the best berries and are not apt to suffer from pests and diseases as much as old beds.

In the commercial sections, where the type of soil is a very unfertile sand, very heavy applications of fertilizers are given, as well as an abundance of cowpeas grown. The strawberry list in Bulletin No. 52 gives the variety tests up to that time. Since then the effort has been to secure some reliable data upon the yields of our best commercial varieties. The leading commercial variety in Louisiana at the present time is the Klondyke. There are two Klondyke strawberries. One originated in the North and the other in Tangipahoa Parish, La. The Louisiana variety was originated by Mr. R. L. Cloud, who now resides in Hammond, who also brought out the Cloud, one of the best berries we have ever grown. The Klondyke is grown universally in the strawberry section.

The varieties grown have been the Brandywine, Cloud, Klondyke, Lady Thompson (Fig 14), and Michael's Early, but complete records have not been secured. The Lady Thompson has been one of the best berries grown at the Station, fully as good as any grown for all purposes except transportation.

RECORD OF KLONDYKE BERRIES FOR 1908.

	One year old bed.	Two year old bed.
First picking	March 7	March 15
Largest picking	April 8	April 7
Last picking	April 30	April 27

The new bed yielded at the rate of 2,880 quarts and the old bed at the rate of 1,480 quarts per acre.

ORCHARD PESTS, DISEASES AND THE SPRAYER.

Letters are received continuously concerning our most common orchard pests, and diseases, and their treatment. This brief com-

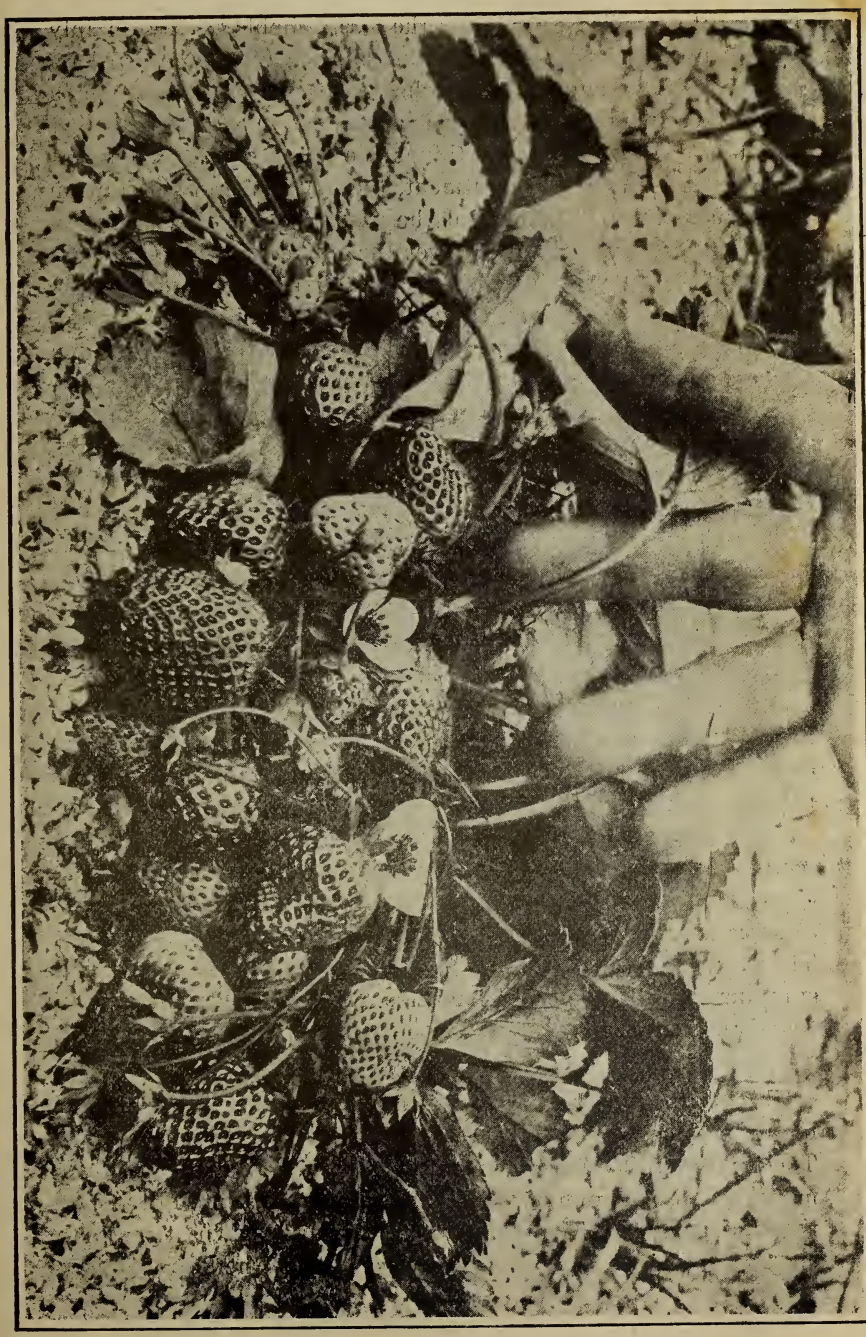


Fig. 14—Lady Thompson Strawberry Plant.

pilation of remedies, taken from the most reliable sources, mainly from Experiment Station Bulletins, is added to the orchard report in order to supply those who receive it with the common remedies for the most prevalent troubles.

In the treatment of these things the spray pump is a necessity. In order to apply treatment, the material must be put on thoroughly and all the parts of the plant covered. This necessitates that it should be spread over the surface of the plant with force. The spray pump with a good pressure maintained insures not only fineness of spray, securing an even application over all the surface, but it also causes the material to adhere. Force and fineness of spray are essential in a spray pump.

There are numerous firms making spray pumps, and a pump of any size, bucket, knapsack, barrel or tank, may be secured easily. There are various methods used in these pumps for applying force, but the thing desired is a steady, even application of it, and any pump which accomplishes this will do good work. There have been found in certain sections so-called gravity sprayers. There is no excuse for the sale of these, as there is scarcely any force given to the application of the treatment, and little good results.

In case that treatment is applied with dry matter, or in powder form, it is quite essential that force should be applied to this also. There are powder guns to be obtained which apply the powder with force and thus secure both thorough application and adherence of the material. A number of powder guns are also to be found on the market and may be secured easily.

Practically, with one exception, all the orchard pests and diseases may be treated through the agency of the spray pump. The exception is the blight of the pear, apple and quince. While spraying may be employed for these, the best treatment is to be found in the knife.

PEAR BLIGHT.

This is probably the worst plant disease known. A great many inquiries come to the Station, asking for treatment for the blight. The treatment itself is very simple. It consists of a careful removal and destruction of the affected part, and a late fall inspection and pruning. This is the best treatment known at the present time. Care should be taken always to keep the knife and saw

away from the diseased wood by cutting well below the diseased part, so as not to carry the disease from tree to tree by inoculation. If there is danger of this being done, the knife should be sterilized frequently by washing it in a 1% solution of carbolic acid.

The varieties of sand pears (Pyrus sinensis) which are grown in the South, are very luxuriant growers, especially on our moist alluvial lands, and, this being the case, manures should be applied to them with caution. In the majority of cases opposite treatment should be sought. that is, to seek to control growth, and subdue the luxuriance. This is difficult to do in the alluvial lands, which are moist and fertile, but the very least amount of tillage, at the same time keeping them reasonably clean, will go far toward checking excessive growth.

On the proper soils the problem is not so difficult. It is not meant by this that pears should be neglected. They, like other fruits, repay in proportion to the amount of intelligent attention they receive. When blight appears it should be removed and destroyed at once. Spraying has been followed by a few, but experiments do not show that much can be expected in the way of results. The aim should be to check growth, as young and tender shoots become diseased quickly, and to prune and destroy the affected parts.

There are a number of so-called blight remedies being sold throughout Louisiana, made up of various drugs and materials. Some of these to be used by applying the materials to the roots of the trees, and others to be injected or deposited in the body of the tree. One of these remedies examined some time ago was composed almost entirely of brick dust; others contain calomel, sulphur, etc.

There is no reliable evidence to be obtained that these remedies have ever accomplished anything more than the circulation of money, often hard-earned, which could have been put to a better use.

To repeat, *the best known treatment for the pear blight, and other similar blights, is to carefully cut it out and destroy it.*

TREATMENT FOR EATING INSECTS.

As a rule any insect that eats any outside portion of the plant may be treated very easily. It should be fed some material not

hurtful to the plant, but poisonous to the insect. There are two standard materials, among the many poisons, that may be mentioned as leaders. These are Paris Green and Arsenate of Lead. These are sometimes called stomach poisons.

Paris Green.—This old remedy has been used for many years. Chemically it is aceto-arsenite of copper and is practically insoluble in water and not absorbed by vegetable tissue unless it contains an unusually large amount of soluble arsenious acid. When applied pure, as many cotton planters practice, it is often very injurious to plants. It may be used either wet or dry.

Formula, Paris Green, Wet.—

Paris Green.....	1 pound
Quick lime.....	2 pounds
Water.....	200 gallons

Slake the lime and add the Paris Green gradually. Then add water to the required amount. The lime may be omitted, but it lessens the danger of injuring the foliage. Amount of water should be increased for tender foliage, such as the peach and other stone fruits.

Formula, Paris Green, Dry.—

Paris Green.....	1 pound
Flour, gypsum, or air-slaked lime.....	50 to 100 pounds

Mix thoroughly and apply with a powder gun early in the morning when dew is on. Parish Green sold in Louisiana, by law, should have a tag showing that it has been analyzed and is up to the standard.

Arsenate of Lead.—This arsenic compound has recently come into use and is very rapidly taking the place of Parish Green in garden and orchard treatment. From one to three pounds of Arsenate of Lead is used with fifty gallons of water. The mixture may be made very easily by weighing out the required amount of Arsenate of Lead, and adding a small quantity of water. Stir this into a paste, add more water, making it a thick mixture and then pour it into the full quantity of water, and thoroughly stir. It is easy to make, does not injure foliage, and is cheap and efficient.

TREATMENT FOR SUCKING INSECTS.

There are a large number of pests that do not devour a plant, but instead suck the juices and endanger its life. In the orchard

will be found the plant lice and scales which belong to this class. As it is impossible to feed them poison, it is necessary to apply some substance that will kill by contact. Various substances have been used for this purpose. For the plant lice or aphis the standard treatment is whale oil soap or coal oil emulsion, either of which is effectual. These are known as contact poisons.

Coal Oil Emulsion.—There are a number of different methods of making this mixture, but the following one will be found satisfactory:

Boiling rain water..... 1 gallon
Hard soap..... 1-2 pound
dissolve by boiling, remove from the fire and add
Coal oil..... 2 gallons

Churn this mixture for twenty minutes. This may be done easily by running the mixture through the spray pump. For plant lice use one part of this mixture to fifteen parts of water. For other insects use one part to ten parts of water. Thorough agitation of the material before using is necessary. This is a very cheap and effectual remedy, very easily applied with a sprayer.

Whale Oil Soap.—This is a simple suds made by using one pound of whale oil soap to five to seven gallons of water. Increase the water for the more tender plants. Churn into a thorough suds so as to make a most thorough solution before using. This is a very simple and effectual remedy also, easily made and sprays with no difficulty.

SCALES.

By far the worst pests of the orchard at the present time are the different scale insects, which by their persistent attacks and overwhelming numbers suck the juices of the fruit trees. As they cover themselves with a protective coating or scale, they have to be treated by using a very powerful and penetrating solution. The worst one of these scales is common now over most of the United States and we have it in nearly all sections of Louisiana. It is the San Jose scale. Treatment for this scale will be effectual for others as well, unless the tree be an evergreen, in which case some mixture not hurtful to green foliage must be used.

The Lime-Sulphur Solution.—This solution is the standard treatment for the San Jose scale, and is made as follows:

Formula.

Stone lime	21 pounds
Sulphur	18 pounds
Water	50 gallons

Have plenty of hot water on hand and if possible use a 50-gallon iron kettle for making the mixture. In the kettle heat up a few gallons of water. When brought to a boil, add the sulphur which should be previously mixed with cold water and made into a paste. This will facilitate mixing later on. After the sulphur is added, stir it thoroughly and then add the stone lime. Violent boiling will then take place, which helps to break down the sulphur and causes it to combine with the lime. From time to time add water and continue the boiling for forty minutes. When complete there should be fifty gallons of the mixture, and it should be used when hot.

This mixture is for winter use on dominant deciduous trees only, and is the best treatment known for this serious pest.

Resin Wash.—There are certain pests upon evergreen trees, like the orange, which require a stronger wash than either the coal oil emulsion or whale oil soap. While the latter mentioned remedies are servicable in summer time a winter treatment of the resin wash is much more beneficial. The white fly upon the orange will require such treatment. It is made as follows:

Formula.

Resin	20 pounds
Caustic Soda 98%	4 1-4 pounds
Fish oil	3 pints

Water for final amount 150 gallons.

In a large kettle heat 14 gallons of water and when heated add the resin and the fish oil, after which add the soda in small quantities to prevent sudden violent boiling. Boil for two or three hours, and add warm water occasionally to prevent boiling over. Cold water for this purpose should not be used. This material when completed will be sufficient for a total of 150 gallons. When strained it will be ready for use. It is essentially a smothering mixture for evergreen trees in their

most dormant season. For summer treatment of these trees the common whale oil soap is used.

BORERS.

The borers which infest many of the fruit trees are very difficult to control. Being insects which live inside the tree or the fruit, they are safe from anything that can be done after they once get in. The remedies are mainly preventive.

There are a number of things to do for the tree borers, which are so bad upon the peach trees. White wash has been used with beneficial results, also various dressings of materials that will be obnoxious to the insect, which usually contain some coal tar preparation. There are, however, serious objections to coal tar, as it may contain many impurities, which may be very injurious to the tree.

Banking up the tree with earth in summer and removing it late in the fall is also practiced. This causes the moth to lay its eggs, which is done generally in August above the bank of earth. When this is done in the North, the cold weather often injures the larvae. It is doubtful if the cold weather in Louisiana ever affects the insect. When the larvae penetrate the bark of the tree above the bank of earth it may be detected more easily.

Various materials have also been used for wrapping the tree, with more or less success, but after all the only reliable method is to personally examine each tree and remove every borer. This should be done in October and November most thoroughly. A good knife and a pointed wire are all that is necessary for the work and each mass of gum and "chips" examined, removed, and the channel left by the borer followed, and the pest killed. This is expensive treatment, but it is effectual. A heavy coat of whitewash after "worming" will make it objectionable to the borers that follow.

CURCURLIO.

These are fruit borers that infest the young fruit of the plum and the peach. Spraying with Paris Green or Arsenate of Lead is practiced, just as the blossoms fall, and repeated once or twice at intervals of ten days. The jarring process is also followed. This consists of using a canvass sheet under the tree, and jarring the tree. The curculio feigns death when disturbed

and falls on the canvas sheet and is collected. The best time for this is very early in the morning. Inverted umbrella-shaped canvas-covered frames, placed on wheels so as to be easily placed under the tree, are used in the Northern plum orchards, and it is stated that 75 per cent of the curculios are thus collected. Chickens running in the peach and plum orchard are very useful in picking up the beetles, while pigs if allowed at intervals in the orchard destroy many of the curcurlios by eating the fallen fruit.

COMBINED TREATMENT.

Sometimes it happens that an insecticide and a fungicide are both needed. In that case some of them may be combined.

To Bordeaux Mixture, consisting of 50 gallons, add 6 ounces of Paris Green, or 1 1-2 pounds of Arsenate of Lead. This will serve both purposes.

ROOT GALL AND ROOT KNOT.

These troubles, though distinct, are both to be treated in the same manner. The Root Gall or Crown Gall, as it is often called, appears near the crown of the roots, while the Root Knot appears on the smaller roots. Usually these troubles come to the orchard through the young trees obtained from a nursery that has them. It is well then to examine every young tree purchased, and not plant any that has galls, knots or swellings anywhere upon its roots. Treatment consists of digging up and destroying all affected trees, and not to deal with nurserymen who sell trees having galls or knots upon the rootlets of the young trees in his nursery.

TREATMENT FOR FUNGOUS DISEASES.

There are numerous fungous diseases which attack the orchard tree. Among them will be found the mildews, moulds, rusts, leaf diseases, fruit rots and sundry other diseases. These diseases are propagated by means of spores that are carried by insects and the wind from plant to plant. When they rest upon a plant, and conditions become favorable for growth, these spores germinate, grow and live either *on* or *in* the tissues of the plant, as the case may be, and the plant becomes diseased.

Years ago it was found that the presence of copper in the most minute quantity prevented spore germination and also checked the growth of fungous diseases, and treatment today

consists in applications which contain copper in some form. Sulphur is also used.

The two standard remedies for all these fungous diseases are Bordeaux Mixture and Ammoniacal Carbonate of Copper.

BORDEAUX MIXTURE.

This is made as follows:

Formula.

Sulphate of copper	4 pounds
Quick lime (air slaked, 10 pounds)	6 pounds
Water to make	50 gallons

Dissolve the sulphate of copper in five gallons of water, using a wooden vessel. A barrel will answer. In another vessel slake the lime in a small quantity of water. When cooled, pour the lime solution into the copper solution, mixing thoroughly by constant stirring. After mixing, dilute to the required quantity.

This is a standard mixture, universally used on all fungous diseases. It is readily seen, which adds value to it under certain conditions.

AMMONIACAL CARBONATE OF COPPER.

This remedy is quite easily made, and when put upon plants can scarcely be seen. It is very effectual and easier to spray than the Bordeaux Mixture.

Formula.

Carbonate of copper	5 ounces
Ammonia, enough to dissolve it, about	3 pints
Water	50 gallons

Wet the carbonate of copper before pouring it into the ammonia and use an open dish, as chemical action may be vigorous. Where the Bordeaux Mixture would be unsightly or not desired, this solution answers the purpose just as well.

It should be remembered that solutions of copper act upon ordinary metal vessels and should always be handled in wooden, glass, brass or copper receptacles.

COST OF VARIOUS INGREDIENTS USED IN FIGHTING ORCHARD PESTS

AND DISEASES.

Sulphate of copper	about	8c	per pound
Carbonate of copper	"	25c	per pound
Ammonia	"	$1.50	per gallon
Paris green	"	30c	per pound
Arsenate of lead	"	18c	per pound
Sulphur	"	4c	per pound
Stone lime	"	25-40c	per bu.
Whale oil	"	15c	per pound

The following firms make or handle spraying machinery:
Goulds Manufacturing Co., Seneca Falls, N. Y.
The Deming Co., Salem, Ohio.
Field Force Pump Co., Elmira, N. Y.
Morrill & Morley, Benton Harbor, Mich.
F. E. Myers Pump Co., Ashland, Ohio.
Wm. Stahl, Quincy, Ill.
Spray-Mortor Co., Buffalo, N. Y.
Beck & Gregg Hardware Co., Atlanta, Ga.
P. J. Berckmans Co., Augusta, Ga.
Leggett & Brother, New York, N. Y.

ORCHARD FERTILIZERS.

The problem of fertilizing the orchard is rather a difficult one. The early life of the tree, for two or three or more years, according to the kind, should be devoted to growth. The lands of Louisiana outside of the sandy sections possess so much fertility, especially nitrogen, that growth is too vigorous and luxuriant, and fruit trees are apt to devote their energies to growth and not to fruit production. It is doubtful if nitrogen in any form, even in a crop of cow peas, should ever be applied to fruit trees in the rich lands of Louisiana.

In the hill lands and pine flats the case is different and in their early growth the trees should be fertilized with some good general mixture, similar to that used for cotton or corn. When the orchard comes into fruitage, its function is not to grow, but to produce fruit and seed. Its demands consequently are for those manurial elements which are needful for production of fruit.

Nitrogen should not be used at this time, then, unless the general behavior of the tree indicates a need of it. Phosphoric acid and potash, however, constitute the great orchard manurial elements, needful for the production of fruit, and the following ingredients are recommended:

100 lbs. ground bone.
100 lbs. acid phosphate.
100 lbs. muriate of potash.

No nitrogen should be added to this unless the general condition of the trees should indicate a need of it, and, should that occur, a crop of cow peas turned under would probably supply all that would be needed.

Three hundred pounds of the mixture given, per acre, would not be a heavy dressing. Some orchardists increase this amount, as the orchard grows older and increases its yield of fruit, to 1000 pounds per acre. The character of the land, and the behavior of the tree, would govern largely the kind and amount of manure used, and one has to observe these things closely in order to intelligently manage the problem of fertilization.

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Agricultural Experiment Station

OF THE

Louisiana State University

and A. & M. College,

BATON ROUGE.

ANALYSES

OF

COMMERCIAL FERTILIZERS

AND

PARIS GREEN.

J. E. HALLIGAN, B. S.

BATON ROUGE, LA.
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